

**BRANCHUS WHITEHEADI, NEW SPECIES, FROM SOUTHERN TEXAS,
WITH NOTES ON THE GENUS *BRANCHUS*
(COLEOPTERA: TENEBRIONIDAE)**

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Abstract.—A new species, *Branchus whiteheadi* Steiner (Coleoptera: Tenebrionidae; Tentyriinae), is described from southern Texas, U.S.A. It is illustrated and compared with its nearest known congener, the Mexican species with which it has been confused, *B. opatroides* Champion. Notes are given on habitats, distributions, characters, and future studies of *Branchus* species.

Key Words: Coleoptera, Tenebrionidae, *Branchus*, North America, Central America, West Indies, island biogeography

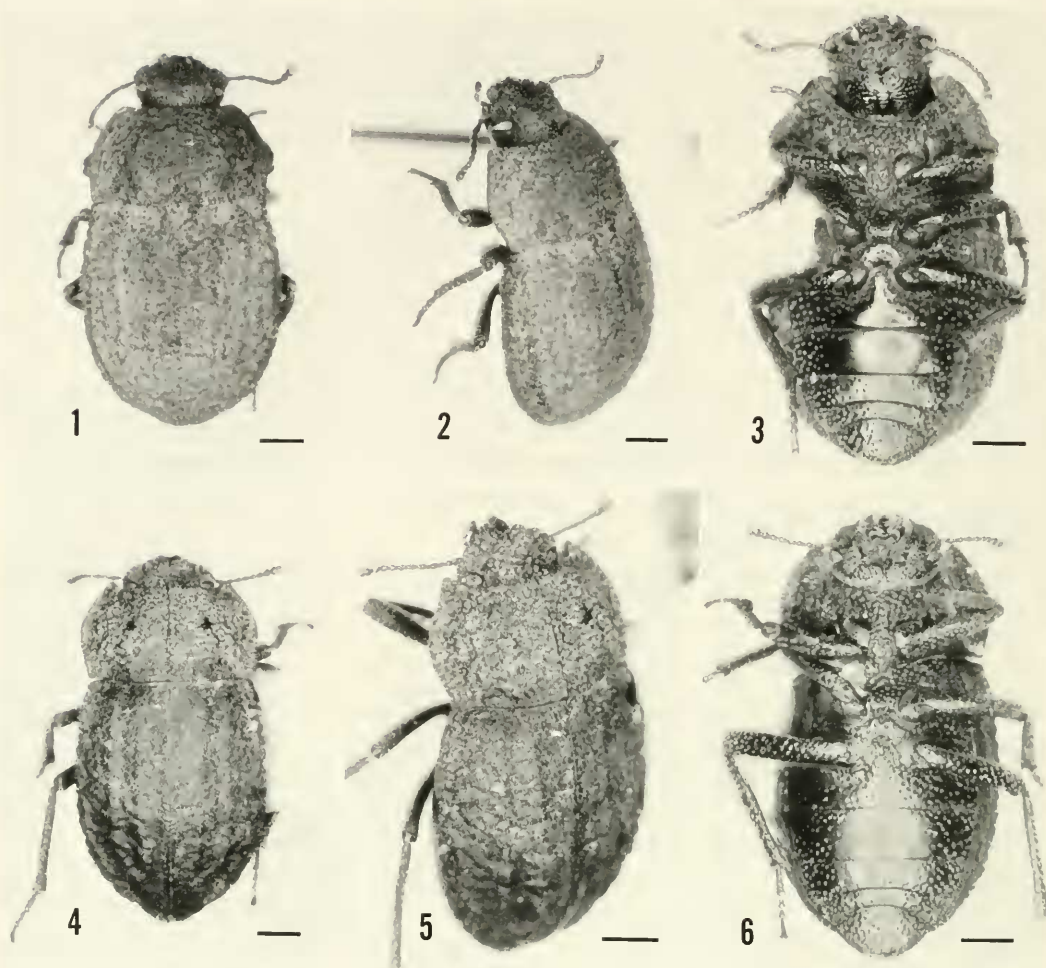
With his subtle sense of humor, Don Whitehead was always one to add spice to a field trip. Back in June 1982, while camped by the dunes near St. Anthony, Idaho, Don came to me with a lively handful of tenebrionid beetles, *Eusattus muricatus* LeConte. We had been finding these in fair abundance, yet in his typically thorough and helpful manner in collecting for colleagues, Don made sure I had a sufficient series. As numerous beetles spilled from among his fingers and scurried over the sand at our feet, Don asked, "Are *Eusattus*-fied?"

With this and other memories of our times, it is satisfying and more than fitting for me to dedicate to Donald R. Whitehead this paper and the following new species (in a genus related to *Eusattus*) which he helped to collect.

The genus *Branchus* LeConte (1862, 1866) was erected for the species *B. floridanus* LeConte, now known from several localities in southern Florida (Triplehorn and Weems 1964). Several other species, some as yet undescribed, occur throughout Central America and on several Caribbean islands

(Blackwelder 1945, Marcuzzi 1984), and one of these, *B. opatroides* Champion (1892), has been listed as occurring in Texas (Leng 1920, Arnett 1960, Papp 1961). The genus is currently placed in the Tribe Coniintini, Subfamily Tentyriinae (Doyen 1984).

While collecting in southern Texas in December 1984, series of a small *Branchus* species were found at two localities. Having earlier studied a paratype of *B. opatroides* from Veracruz, Mexico, these Texan specimens were immediately recognized as belonging to a separate, new species. Among Tenebrionidae in museum collections, I was able to find additional specimens of this species from Texas, including a few with the identification label "*Branchus opatroides*." None of the examined *Branchus* specimens from Texas, however, agree in appearance with or fit the description of the Mexican *B. opatroides*. Evidently, the literature records of the occurrence in Texas of *B. opatroides* were based on misidentified specimens of the new species proposed in this study. *Branchus opatroides*, then, is known only from three localities in Veracruz and



Figs. 1-6. Photographs of *Branchus* species: 1-3, *B. whiteheadi*, n. sp., holotype male (San Patricio County, Texas), dorsal, oblique lateral, and ventral views, respectively; 4-6, *B. opatroides* Champion, paratype male (Veracruz, Mexico), same sequence as above. Scale lines = 1 mm.

Jalisco, Mexico (Champion 1892). The only *Branchus* species presently known from the United States are *B. floridanus* and the one described here.

***Branchus whiteheadi* Steiner,
NEW SPECIES**

Description.—Convex, oval beetles (Figs. 1-3), 6.0 to 8.3 mm in length, dark brown to black, dorsum usually encrusted with pale coating of soil on coarsely punctate and rugulose surface, bearing small, brownish, erect, subclavate setae.

Holotype male.—Body length 6.2 mm from anterior angle of pronotum to elytral apex. Head $\frac{1}{2}$ as wide as pronotum, widest in front of eyes (at laterally-produced epistomal canthi); frons slightly concave at middle, with large punctures that obscure epistomal suture. Antenna with segment 3 equal in length to segments 4 and 5 combined; segments 5-9 globular, bead-like; segments 10 and 11 wider than long and broadly connected to form a rounded, slightly flattened club, with segment 11 smaller and more narrow than segment 10.

Mentum broadly heart-shaped, not sharply angled, with surface flat, coarsely punctate. Gena sharply produced anteriorly as far as anterior margin of mentum.

Prothorax nearly twice as wide as long, broadest at basal $\frac{1}{3}$, sides evenly arcuate, base very weakly sinuate, anterior margin broadly, evenly emarginate; anterior and posterior angles not produced; lateral margin not explanate, lacking a raised, polished bead; pronotum evenly convex except for slightly raised lateral area near base; surface completely, roughly pitted with large contiguous punctures, each with a short, stout seta; ventral surface similar except punctures more distinct, not contiguous.

Elytra widest near middle, roughly two times longer than wide, as wide at base as base of pronotum and meeting it to form a nearly continuous body outline; dorsal surface without defined costae or sulci; all surfaces similar to that of pronotum except more rugose and subcostate laterally, with setae larger, more clavate and erect, arranged in longitudinal series; margin of pseudopileon rounded, not defined except near base; epipleuron obscured by punctures and soil coating except in apical $\frac{1}{6}$, where it is wider, deeply sulcate. Sterna with most surfaces punctate, punctures distinct and bearing small setae; middle of metasternum convex and polished, with only a few small punctures; abdominal sterna 1–3 becoming impunctate or nearly so medially, with smooth to minutely rugulose, polished surfaces. Legs unmodified, relatively short; protibia well broadened at apex, with a distinct apical tooth at outer angle.

Tegmen (Figs. 7, 8) with apical piece bifid at apex, strongly arched dorsally, subequal in length to basal piece. Median lobe (Figs. 9, 10) long and nearly parallel-sided, slightly thickened toward apex, more so in lateral view; apex with a small median emargination. Apex of abdominal sternum 8 with a deep, evenly rounded emargination (Fig. 11).

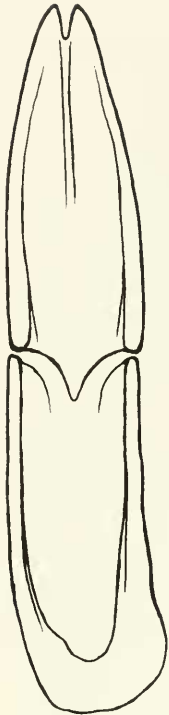
Allotype.—Similar to male but larger, 7.6 mm long; body slightly more robust and

convex. Impunctate areas of abdominal sterna shining and smoothly polished, without minutely rugulose sculpturing. Ovipositor with coxites heavily sclerotized, wedge-shaped, with pointed, slightly upturned apices.

Variation.—Of the type-series, males ($n = 30$) are 6.0 mm–7.8 mm long from anterior angles of pronotum to elytral apex; females ($n = 15$) are 6.9 mm–8.3 mm long. Pronota vary from 3.5 mm–4.3 mm wide in males, 3.8 mm–4.5 mm in females. Body width across elytra varies from 3.7 mm–4.8 mm in males, 4.3 mm–5.1 mm in females. In some individuals, the pronotum bears some vestiges of characters seen in other *Branchus* species, i.e. the raised, polished median line and lateral discal bosses, but these features are not obvious and are usually obscured or absent in *B. whiteheadi* due to the invasion of the coarse punctures.

Diagnosis and similar species.—The relatively small size, stout, convex body form, dorsal sculpturing, and extent of the produced gena relative to the mentum will separate the new species from other known *Branchus* members. *Branchus whiteheadi* is most similar to *B. opatroides*, the species with which it has been formerly confused. In the latter species, which occurs in southern Mexico, the pronotum is somewhat explanate and more produced at the anterior angles (Figs. 4–6) and has a raised, polished, median carina and a raised shining discal boss on each side; the head has a distinctly concave frons; the elytra are relatively flattened dorsally, each with 3 broad, shallow sulci separated by somewhat distinct carinae; legs and antennae are relatively slender, with middle segments of the flagellum distinctly longer than wide and widest toward apex, rather than bead-like; segment 3 is shorter than segments 4 and 5 combined. Differences in the male genitalia and abdominal sternum 8 are illustrated (Figs. 12–16).

Specimens examined and known distribution.—Fifty one specimens from 11



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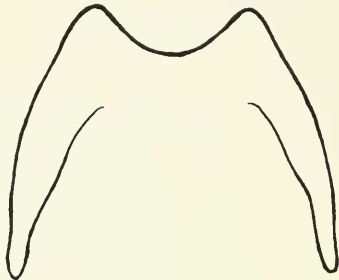
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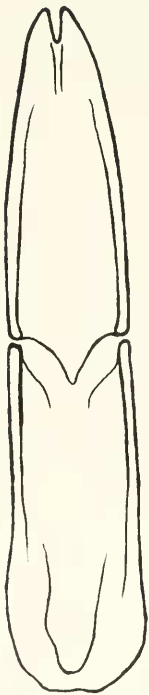
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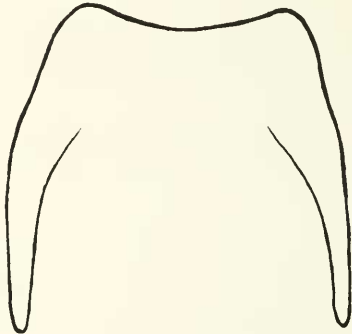
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known localities, all in Texas, U.S.A. (Fig. 17). Label data quoted verbatim; additions are bracketed. Types are deposited in the U.S. National Museum of Natural History, Smithsonian Institution, Washington, D.C.

Holotype, allotype, 11 paratypes (and 5 corpses in poor condition), "TEXAS: San Patricio Co., 5 km SW Mathis at Nueces River, 9 December 1984, W. Steiner, B. Gill & D. Whitehead, colrs."; 5 paratypes, "TEXAS: Uvalde County, 15 km N Concan at Frio River, 12 December 1984, W. E. Steiner, R. D. Gordon, et al."; 18 paratypes, "Starr Co., Tex., K. [15 km W El Sauz] 5-VII-47, George B. Vogt; Under yucca cut 17 mos. ago, sandy soil" (one of these is labeled "*Branchus opatroides* Ch., det. T. J. Spilman 1967"); 1 paratype, "2 mi. South of Buchanan Dam, Llano Co., Tex., Sept. 7, 1973; H. R. Burke, Collector"; 1 paratype, "Bexar Co., Tex., 4-15-1956; H. R. Burke, Collector; under cactus"; 1 paratype, "Eagle Pass, Tex. [Maverick County], 11-19-33; S. E. Jones, Collector; 5919"; 2 paratypes, "Tex., Medina Co., 3 mi. W. D'Hanis, VII-11, 1965, L. & C. W. O'Brien"; 1 paratype, "D'Hanis, [Medina County], Tx., IV-25-08; On *Opuntia*; J. D. Mitchell, Collector"; 1 paratype, "Dimmit Co., Texas; Coll. Hubbard & Schwarz; *Branchus opatroides* Champ., Li"; 1 paratype, "Tex. [state label only]; *Branchus opatroides* Champ., Li"; 1 paratype, "Enter Identification Card No. 616, Bufo #, Ft. Clark [Kinney County], Texas; *Branchus opatroides* Champ., Det. L. L. Buchanan"; 1 specimen, head and legs missing, "Enter Identification Card No. 574, Bufo, Ft. Bliss [El Paso County], Texas."

On the latter two specimens (collector and date unknown), "Bufo" on the labels prob-

ably refers to toads of the genus *Bufo* which may have been eating these beetles. The "Ft. Bliss" record is far west of the range of other known specimens, making a search for others along the Rio Grande valley desirable. The known range includes other river systems of the Texas coastal plain and extends into the elevated "Hill Country" and southeastern Edwards Plateau. *Branchus whiteheadi* will likely be found in northeastern Mexico as well, but I have seen no records.

Notes on habitat and life history.—Adult *B. whiteheadi* occur during all seasons of the year. Localities are xeric scrub-shrub habitats. Adults occur in sandy substrates under plant debris on which they likely feed; examined gut contents are bits of plant tissue. Nothing is known of the seasonal and daily activity, nor the larval stages. In the largest series of specimens (18), taken by George Vogt in Starr County, 5 July 1947, all but two lack the soil coating that usually covers these beetles, and they are various shades of brown; these had likely recently emerged when collected, suggesting that larvae and pupae may be found during May and June.

The type-locality is "on a rocky bluff with dense scrub, but open sandy turf area" according to my field notes of 9 Dec. 1984; this is a maintained recreation area with a mixture of natural scrub, mostly honey mesquite (*Prosopis glandulosa* J. Torrey), and some coarse turf clearings with stone walkways and buildings. The first specimen was found "under small piece of wood in open sandy turf near building," then, in notes, "Intensified the search for more in that area but got none; took some time before locating more, but eventually scratched up about a dozen specimens—most in a localized, higher and more sandy, sparse short

Figs. 7–16. Male genitalia of *Branchus* species: 7–11, *B. whiteheadi*, n. sp. (drawn from holotype): 7, tegmen, dorsal view; 8, same, lateral view; 9, median lobe, dorsal view; 10, same, lateral view; 11, abdominal sternum 8, ventral view; 12–16, *B. opatroides* Champion (drawn from paratype): same structures and sequence as above. Scale line = 0.5 mm.

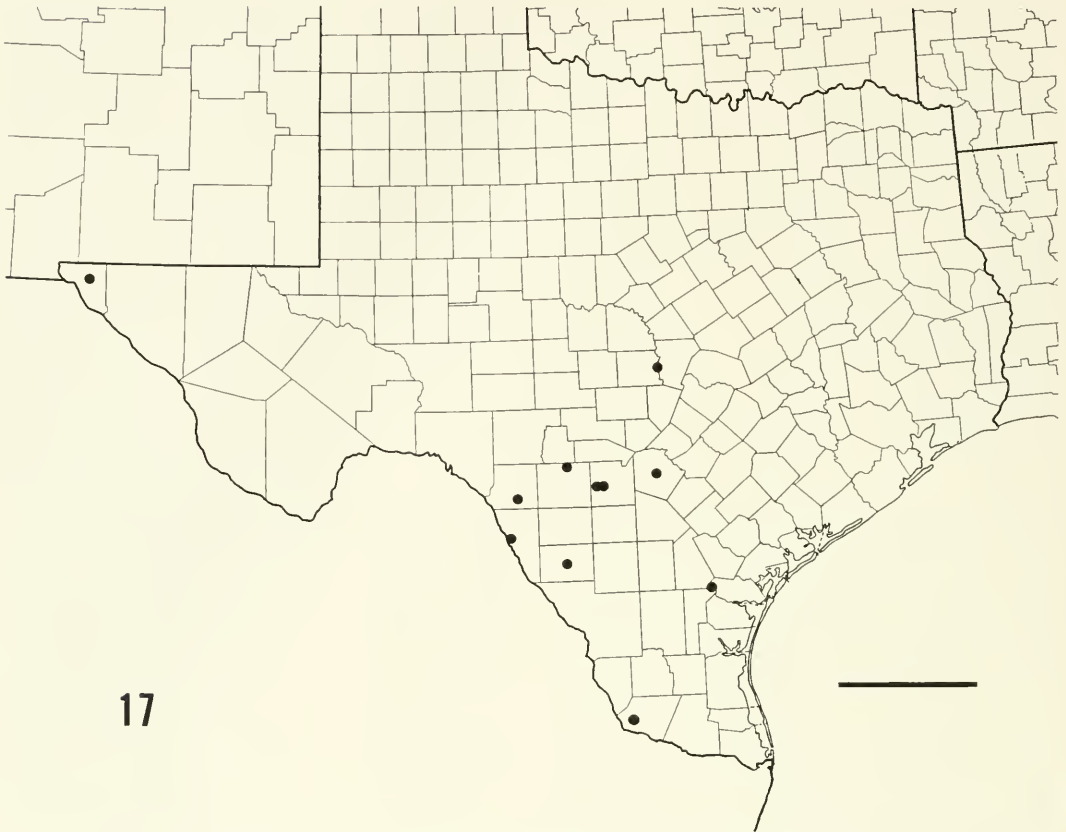


Fig. 17. Known distribution of *Branchus whiteheadi*, n. sp., on map of southern Texas, U.S.A. Scale line = 200 kilometers.

turf area around an isolated mesquite bush. First found fragments of corpses, then one by one began uncovering live *Branchus*, each usually nestled in loose dry sand and organic debris around crowns of the turf grass, on sandy clay that was otherwise rather hard. Found no beetles under grass tufts that lacked loose sandy debris—this seems to be the basic requirement for *Branchus*—pockets of loose sandy soil and a layer of dead plant debris under some plant cover, in a scrubby xeric habitat and usually concentrated around edges of open areas.” The latter statement was based on observations of *Branchus* spp. from inland xeric areas in Central America and *B. floridanus* in maritime scrub.

Notes taken 12 Dec. 1984 record *B. whiteheadi* in a more natural but similar habitat: “Collected midday at crossing of Frio River near Garner State Park, Uvalde County, north of Concan and west of Utopia. Mesquite scrub at top edge of river basin was habitat for tenebrionids: several more of the new *Branchus* (apparently the same as those from Mathis site) were found under patches of leaf litter where sandy loose pockets of soil were, beneath the shrubs but certainly not well-shaded, on open, well-drained microhabitats. Misc. *Blapstinus* and an *Opatrinus* here also, but under stones or pieces of wood in partial shade. *Branchus* do not cluster under objects but stay scattered under leaf litter in more open spots—

a less likely habitat in which to find beetles, and may explain their rarity in collections, aside from looking like dry turds.”

REMARKS AND DISCUSSION

Based on several apparent synapomorphies, *B. whiteheadi* and *B. opatroides* belong in a species group that includes at least two others (undescribed) from southern Mexico. Species of this “*opatroides* group” have a small and relatively stout body, have the genae strongly produced anteriorly (most prominent in *B. whiteheadi*), lack a raised, polished, lateral bead on the pronotal margin, and have a poorly defined pseudopleural margin. Also, the head usually is widest at the epistoma rather than the eyes, but the polarity of this state is uncertain at present. For the most part, all of the above character states are shared among *Branchus* specimens from Jamaica and other islands in the western Caribbean, but not, in general, among members of the genus from the Bahaman region (“*floridanus* group”) and Central America (“*obscurus* group”).

Sharply produced genae are also seen in species of *Oxinthas* Champion but not in other Coniontini. In varying degrees this genal form appears in many Asidini and other tentyrine tribes. Thus, the homology and polarity here is open to question.

Central American mainland species include a diverse assemblage of forms, but seem to possess the most plesiomorphic character states. The body forms are more like those of other surface-dwelling Coniontini (and resemble some Asidini) rather than the more specialized, psammophilous forms; all have erect, clavate setae on dorsal surfaces, and usually a well-defined pseudopleural carina; the male genitalia are relatively unmodified. In the species of the western Caribbean area, the body form tends to be more elongate and flattened, and setae on the dorsum are very numerous, small and peg-like. *Branchus floridanus* and relatives make up the most distinct and de-

rived complex of species. Synapomorphies include the change from erect clavate setae to those prostrate and scale-like, the development of sexual dimorphism in the legs, and a set of distinct characters in the male genitalia not known in any other Tenebrionidae.

It is interesting to note the apparent allopatry between members of the Branchi and other subtribes (Doyen 1984) of the Coniontini as a whole, with the exception of *B. whiteheadi* and a few *Eusattus* species which have some overlap in southern Texas. Likewise, *Branchus* species groups appear to be geographically distinct. With the material presently at hand, observations indicate that Central America holds the more primitive members, which inhabit dry forest areas; other lineages radiated northward and among the Antilles, and their members live in various semidesert and coastal dune scrub habitats. *Branchus whiteheadi*, with its most globose form and stout appendages, is the most distinct and derived member of the “*opatroides*” group, and represents the northern mainland limits of the genus.

Making sense of the sister-group relationships among the Branchi will not be easy. In collections presently examined, there are more undescribed *Branchus* species than known ones. While a few are represented by series, many are known from unique specimens, often from remote islands, indicating that more undiscovered species likely exist. Series of specimens will be needed to clearly define species, as within series examined, there is much variation among individuals and local populations. Larvae of a few species have been associated in the field, but *Branchus* immature stages remain undescribed.

Adding to this challenge is the degradation of natural habitats by development, grazing, and the spread on islands by introduced plants, especially *Casuarina* spp., which replace native beach vegetation and

cover the narrow band of microhabitat that *Branchus* beetles require.

Members of *Branchus*, as a group of flightless beetles distributed across the West Indies and Central America, will nevertheless offer unusual opportunities for biogeographic studies.

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